

## **CLAIMS**

### **What is claimed is:**

1. A reduced aerosol generating formulated personal care or cleaning product  
5 comprising a) a high molecular weight polymer and b) one or more personal care or  
cleaning product components, wherein said polymer acts as an anti-misting agent  
and increases a  $Dv_{50}$  of the formulated personal care or cleaning product by 10 -  
200% over the corresponding non-formulated personal care or cleaning product.
- 10 2. The reduced aerosol generating formulated product of claim 1, wherein the high  
molecular weight polymer is selected from polyethylene oxide, polyacrylamide,  
substituted acrylamides, acrylamide copolymers, and gums.
- 15 3. The reduced aerosol generating formulated product of claim 1, wherein the high  
molecular weight polymer is a polyethylene oxide having a molecular weight from  
about  $1 \times 10^6$  to  $3.0 \times 10^6$ .
- 20 4. The reduced aerosol generating formulated product of claim 1, wherein the high  
molecular weight polymer is a polyacrylamide having a molecular weight from about  
 $2.5 \times 10^7$  to  $4.0 \times 10^7$ .
5. The reduced aerosol generating formulated product of claim 1, wherein the  
personal care product is a shower or bath gel.
- 25 6. The reduced aerosol generating formulated product of claim 1 wherein the  
cleaning product is selected from a detergent, hard surface cleaner, prespotting  
cleaner, and carpet cleaner.
- 30 7. The reduced aerosol generating formulated product of claim 1, wherein the  $Dv_{50}$   
of the formulated product is in the range of  $55\mu\text{m}$  -  $200\mu\text{m}$ .
8. The reduced aerosol generating formulated product of claim 1, wherein the  $Dv_{50}$  of  
the formulated product is greater than  $60\mu\text{m}$ .
- 35 9. The reduced aerosol generating formulated product of claim 1, wherein the  $Dv_{50}$  of  
the formulated product is greater than  $100\mu\text{m}$ .

10. The reduced aerosol generating formulated product of claim 1, wherein the formulated product further comprises an enzyme.

11. The reduced aerosol generating formulated product of claim 6, wherein the  
5 enzyme is selected from the group consisting of proteases, amylases, cellulases, oxidases and lipases.

12. A method of reducing aerosol generation from a personal care or cleaning  
product comprising incorporating into said product an aqueous composition  
10 comprising a high molecular weight polymer having a molecular weight from about  $0.8 \times 10^6$  to  $4.0 \times 10^7$ , resulting in a formulated product wherein a  $Dv_{50}$  of said formulated product is between 10 to 200% greater than the  $Dv_{50}$  of the corresponding non-formulated personal care or cleaning product.

13. A method according to claim 12, wherein an enzyme is incorporated into said  
15 formulated product either in combination with the high molecular weight polymer aqueous composition or separately from the high molecular weight polymer aqueous composition.

14. The method according to claim 13, wherein the enzyme concentration of the  
20 formulated product comprises about 0.001% to about 10%.

15. The method according to claim 12, wherein the high molecular weight polymer is  
selected from polyethylene oxide, polyacrylamide, substituted acrylamides,  
25 acrylamide copolymers, and gums, and the formulated product comprises from 0.0001% to about 10.0% of the polymer.

16. The reduced aerosol generating formulation produced by the method of claim  
12.

17. A method of decreasing enzyme exposure from a personal care or cleaning  
product comprising reformulating a personal care or cleaning product which includes  
one or more enzymes with an aqueous composition which comprises a polyethylene  
oxide polymer having a molecular weight of about  $0.8 \times 10^6$  to  $4.0 \times 10^6$  or a  
35 polyacrylamide polymer having a molecular weight of about  $2.5 \times 10^7$  to about  $4.0 \times 10^7$  wherein said polymer acts as an anti-misting agent.

18. The method according to claim 17, wherein the personal care product is a shower or bath gel, facial cleaner, lotion, hair shampoo, or bar or liquid soap.

19. The method according to claim 17, wherein the cleaning product is a detergent,  
5 hard surface cleaner, pre-spotting cleaner, or carpet cleaner.

20. The method according to claim 17, wherein the enzyme is a protease.

21. An aqueous anti-misting enzyme composition comprising

10 a) from about  $1 \times 10^{-4}$  to 10 wt% of one or more high molecular weight polymers; and

b) from about  $1 \times 10^{-4}$  to 10 wt% of an effective amount of one or more enzymes.

15 22. The anti-misting enzyme composition of claim 21, wherein the high molecular weight polymer is selected from a polyethylene oxide, a polyacrylamide, substituted acrylamides, acrylamide copolymers, and gums.

23. The anti-misting enzyme composition of claim 21, wherein the high molecular  
20 weight polymer is a polyethylene oxide having a molecular weight from about  $1 \times 10^6$  to  $3.0 \times 10^6$  or a polyacrylamide having a molecular weight from about  $2.5 \times 10^7$  to  $4.0 \times 10^7$ .

24. The anti-misting enzyme composition of claim 21, wherein the composition is  
25 further incorporated into a personal care product.

25. The anti-misting enzyme composition of claim 24, wherein the personal care product is selected from the group consisting of shower or bath gels, facial cleaners, lotions, hair shampoos, bar soaps, and liquid soaps.

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26. The anti-misting enzyme composition of claim 21, wherein the composition is further incorporated into a cleaning product.

27. The anti-misting enzyme composition of claim 26, wherein the cleaning product  
35 is selected from the group consisting of detergents, hard surface cleaners, pre-spotting cleaners, and carpet cleaners.

28. The anti-misting enzyme composition of claim 21 further comprising an enzyme stabilizer.

29. The anti-misting enzyme composition of claim 28 wherein the enzyme stabilizer  
5 is propylene glycol.

30. A method for producing a reduced aerosol generating composition comprising  
combining a high molecular weight polymer having a molecular weight of  
about  $0.8 \times 10^6$  to about  $4 \times 10^7$  with an enzyme to obtain a polymer/enzyme  
10 composition having reduced aerosol generation, wherein the reduced aerosol  
generation reduces enzyme exposure.

31. The method of claim 30 further comprising dispersing the polymer in a water  
miscible nonsolvent prior to combining the polymer with the enzyme.  
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32. The method of claim 30 wherein the combining is conducted at about 35° C.

33. The method of claim 30 further comprising:

- a) incorporating the polymer/enzyme composition with a personal care or  
20 cleaning product composition; and
- b) obtaining a formulated personal care or cleaning product composition  
wherein when said formulated product is used in a desired environment the  
generation of aerosols produced by the formulated product is reduced compared to a  
corresponding non-formulated product.

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34. A method of reducing aerosol generation of a formulation comprising  
reformulating a personal care formulation or cleaning formulation with a  
composition comprising a polyethylene oxide polymer having a molecular weight  
from about  $0.8 \times 10^6$  to  $4.0 \times 10^6$  and comprising from about 0.0001% to about 10.0%  
30 of the formulation, wherein the addition of the polymer increases a  $Dv_{50}$  of the  
personal care formulation by 10 - 200% resulting in a reduced aerosol generation  
from the personal care or cleaning formulation.

35. The method according to claim 35, wherein the reformulated personal care or  
35 cleaning formulation further comprises one or more enzymes.

36. A shower gel comprising a high molecular weight polymer wherein said polymer has a molecular weight from about  $0.8 \times 10^6$  to  $4.0 \times 10^7$  and comprises from about 0.0001% to about 10% of the shower gel; a protease comprising about 0.0001% to about 10% of the shower gel; and one or more further personal care product ingredients wherein said shower gel has a  $Dv_{50}$  that is 10 - 200% greater than a corresponding shower gel lacking the high molecular weight polymer.
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